



SHOP OPERATIONS





SHOP OPERATIONS

TERMINAL LEARNING OBJECTIVES

- Provided references, maintenance facility, maintenance forms, personnel, tools, and engineer equipment, conduct shop operations, to maintain unit readiness without injury to personnel or damage to equipment. (1341-ADMN-1001).
- Provided tool sets, chests, kits, and references, conduct inventory of tool sets, chests, kits, to reconcile inventory records for accountability and serviceability per the references. (1341-ADMN-1002)
- Given an assigned maintenance role, computer and required equipment forms/records, use the

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ENABLING LEARNING OBJECTIVES

- Provided references, identify the operational risk management process, per the MCO 3500.27, OPNAVINST 3500.39, and MCDP 1. (1341-ADMN-1001a)
- Provided reference, identify maintenance levels, per the MARADMIN 581/03. (1341-ADMN-1001b)
- Provided reference, identify maintenance phases to conduct engineer equipment maintenance per the MCO 4790.2_. (1341-ADMN-1001c)
- Provided the reference, identify the characteristics of engineer equipment, per the TM 11275-15/3D. (1341-ADMN-1001d)
- Provided references, and student handout, perform technical manual research per the 11503A-OI/3, TM 10794A-24/2, TM 10794A/B-24P/3 and TM 11503A-OI/4. (1341-ADMN-1001e)
- Provided reference, identify the technical manual that provides instructions for preparation, use, and disposition of engineer equipment records and forms per the student handout. (1341-ADMN-1001g)
- Provided reference, identify engineer equipment records and forms per the TM 4700-15/1_. (1341-ADMN-1001h)
- Provided reference, engineer equipment records and forms, identify the mechanics required entries per the TM 4700-15/1_. (1341-ADMN-1001i)
- Provided references, and student handout, perform parts research per the TM 10794A/B-24P/3 and TM 11503A-OI/3. (1341-ADMN-1001f)

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ENABLING LEARNING OBJECTIVES

- Provided reference, identify tools kits, per the TM 10510-OD/1K. (1341-ADMN-1001j)
- Provided reference, demonstrate correct use of tools, per the TM 10209-10/1. (1341-ADMN-1001k)
- Provided a general mechanics tool kit (GMTK), an inventory sheet, and references, inventory the GMTK for accountability per the TM 4700-15/1_, and SL-3-11668A. (1341-ADMN-1002a)
- Provided a GMTK, an inventory sheet, and references, inventory the GMTK for serviceability of tools per the TM 4700-15/1_, and SL-3-11668A. (1341-ADMN-1002b)
- Given an assigned maintenance role, computer and required equipment forms/records, create a service request for approval, per the established maintenance policy. (1341-ADMN-10XXa)
- Given an assigned maintenance role, computer and required equipment forms/records, create a parts request for approval, per the established maintenance policy. (1341-ADMN-10XXb)
- Given an assigned maintenance role, computer and required equipment forms/records, update the service request to record maintenance status, per the established maintenance policy. (1341-ADMN-10XXc)



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METHOD/MEDIA.



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Instructional Rating Forms



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EVALUATION



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SAFETY/CEASE TRAINING (CT) BRIEF



SHOP OPERATIONS

Operational Risk Management



SHOP OPERATIONS

ORM CONCEPT

- Decision making tool
 - Used by all people at all levels
 - Increase operational effectiveness
 - Anticipating hazards
 - Reducing the potential for loss
 - Increasing probability of a successful mission

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ORM CONCEPT

- Increases our ability to make informed decisions by providing the best baseline of knowledge and experience.
- Minimizing risks to acceptable levels based on mission accomplishment
- Risk in war > than in peacetime
 - Process is still the same



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ORM CONCEPT

- Applying the ORM Concept will:
 - Reduce mishaps
 - Lower costs
 - Provide for more efficient use of resources



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ORM TERMS

- Hazard - A condition with the potential to cause:
 - Personal injury
 - Death
 - Property damage
 - Mission degradation
- Risk - Expression of possible loss in terms of:
 - Severity
 - Probability
- Risk Assessment
 - A process of detecting hazards & Assessing associated risks

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ORM TERMS

- Operational Risk Management
- A process of dealing with risks associated with Military operations, which include:
 - Risk assessment
 - Risk decision making
 - Implementation of effective risk controls

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ORM PROCESS

- Five steps:
 - Identify hazards
 - Assess hazards
 - Make risk decisions
 - Implement controls
 - Supervise



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ORM PROCESS

1) Identify Hazards:

- Outline/chart major steps in the operation
- (Operational analysis)
- Conduct preliminary hazard analysis
- List all hazards associated with each step
- List all causes of those hazards

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ORM PROCESS

2) Assess Hazards:

- Each hazard identified
- Determine associated risk
 - Probability
 - Severity



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ORM PROCESS

3) Make Risk Decisions:

- Develop risk control options
 - Serious risk first
 - Select controls to reduce risk
 - (Mission accomplishment)
- Controls in place - decide
 - Benefit of operation outweigh risk?
 - Communicate with higher authority
 - Chain of Command

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ORM PROCESS

4) Implement Controls

- These are measures that can be implemented to eliminate hazards or reduce the degree of risk.
 - Engineering controls
 - Administrative controls
 - Personal protective equip

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ORM PROCESS

- Engineering Controls
 - Engineering methods to reduce risks.
 - Design
 - Material selection
 - Material substitution
 - Technically - feasible
 - Economically

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ORM PROCESS

- Administrative Controls
 - Reduce risk through specific admin actions.
 - Provide suitable:
 - Warnings
 - Markings
 - Signs
 - Notices
 - Establish written:
 - Policies
 - Programs
 - Instructions
 - SOPs

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ORM PROCESS

- Administrative Controls (Cont.)
 - Train Personnel to:
 - Recognize hazards
 - Take appropriate actions
 - Limit the exposure to a hazard
 - Reduce number of personnel/assets
 - Length they are exposed

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ORM PROCESS

5) Supervise

- Conduct-follow up evaluations of controls to ensure they:
 - Remain in place
 - Have the desired effect
- Continuously monitor for changes and take corrective action when needed



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LEVELS OF ORM

- ORM exists on three levels:
 - Time-critical
 - Deliberate
 - In-depth
- Commander selects which level of ORM depending on:
 - Mission
 - Situation
 - Time available
 - Proficiency level
 - Assets available

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LEVELS OF ORM

- Objective of ORM:
 - Develop sufficient proficiency in applying the process so that ORM becomes an automatic or intuitive part of our decision making methodology.

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LEVELS OF ORM

- Time Critical
 - “On the run” mental or oral review of the situation
 - Uses the five-step process without recording the information on paper
 - Employed by experienced personnel
 - Used to consider risks in a time-compressed situation
- Normally used:
 - During the execution phase of training or operations
 - In planning during crisis response scenarios
- Helpful in choosing course of action when an unplanned event occurs



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LEVELS OF ORM

- Deliberate
- This is the complete application of the five-step process:
 - Used for planning an operation or evaluating procedures
 - Most effective when conducted in a group

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LEVELS OF ORM

- In-Depth
 - Deliberate process with a more thorough assessment
 - Research of available data
 - Use of diagram and analysis tools
 - formal testing
 - Long term tracking of the hazards

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FOUR PRINCIPALS OF ORM

- 1) Accept risk when the benefits outweigh the cost
 - MCDP, War fighting, states

“Risk is inherent in war and is involved in every mission. Risk is also related to gain; normally greater potential gain requires greater risk.”

- The goal of ORM is not to eliminate risk, but to manage the risk so that the mission can be accomplished with a minimum amount of loss.

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FOUR PRINCIPALS OF ORM

2) Accept no unnecessary risk

MCDP also states,

“We should clearly understand that the acceptance of risk does not equate to the imprudent willingness to gamble...”

- Take only risks necessary to accomplish the mission

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FOUR PRINCIPALS OF ORM

3) Anticipate and manage risk by planning

- Controlled easier when identified early



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FOUR PRINCIPALS OF ORM

4) Make risk decisions at the right level

- Leader directly responsible for the operation makes risk management decisions
- Critical Elements:
 - Prudence
 - Experience
 - Intuition
 - Situational awareness of leaders

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RISK ASSESSMENT MATRIX

- Used during the second step of ORM
- Can provide a consistent framework for evaluating work
- Based on:
 - Elements of hazard set
 - Mishap probability

| Risk Management Matrix OPNAVINST 3500.39B | | PROBABILITY | | | |
|---|-----------------------------|--------------------|----------------------|-----------------|----------------------|
| | | A Likely | B Probable | C May | D Unlikely |
| SEVERITY | I Death, Loss of Asset | 1 | 1 | 2 | 3 |
| | II Severe Injury, Damage | 1 | 2 | 3 | 4 |
| | III Minor Injury, Damage | 2 | 3 | 4 | 5 |
| | IV Minimal Threat | 3 | 4 | 5 | 5 |
| <small>1-Critical 2-Serious 3-Moderate 4-Minor 5-Negligible</small> | | | | | |

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RISK ASSESSMENT MATRIX

- Hazard severity:
 - Assessment of the worst consequence or result of a hazard.
 - Severity - potential degree of:
 - Injury
 - Illness
 - Property damage
 - Loss of assets (time - \$ - personnel)
 - Effect on mission

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RISK ASSESSMENT MATRIX

- Hazard severity: Four categories
 - Category I
 - Death
 - Loss of facility
 - Grave damage to national interests
 - Category II:
 - Severe injury
 - Property damage
 - Damage to national interests



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RISK ASSESSMENT MATRIX

- Hazard severity: Four categories (Cont.)
 - Category III:
 - Minor injury
 - Minor property damage
 - Minor damage to national interests
 - Category IV: Minimal Threat



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RISK ASSESSMENT MATRIX

- Mishap Probability:
 - Hazard will result in a mishap/loss based on:
 - Location
 - Exposure
 - Affected populations
 - Experience
 - Previous information

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RISK ASSESSMENT MATRIX

- Mishap Probability: 4 sub-categories
 - Sub-category **A**:
 - Likely to occur immediately or within a short period of time
 - Sub-category **B**:
 - Probably will occur in time
 - Sub-category **C**:
 - May occur in time
 - Sub-category **D**:
 - Unlikely to occur



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RISK ASSESSMENT MATRIX

| Risk Management Matrix | | Probability | | | |
|------------------------|-----------------------------|-------------|--------------|----------|--------------|
| | | A Likely | B Probabl | C May | D Unlikel |
| Severity | I Death, Loss of Asset | 1 | 1 | 2 | 3 |
| | II Severe Injury, Damage | 1 | 2 | 3 | 4 |
| | III Minor Injury, Damage | 2 | 3 | 4 | 5 |
| | IV Minimal Damage | 3 | 4 | 5 | 5 |

RAC 1 - Critical

RAC 2 - Serious

RAC 3 - Moderate

RAC 4 - Minor

RAC 5 - Negligible

SHOP OPERATIONS

ORM REVIEW

- ORM concept
- ORM terms
- ORM process
- Levels of ORM
- Principles of ORM
- Develop a risk assessment matrix

SHOP OPERATIONS

QUESTIONS

- Q. What are the five steps of the Operational Risk Management Process?
- A. Identify the hazards, Assess the Hazards, Make risk decisions, Implement controls, and Supervise.
- Q. What are the three levels of Operational Risk Management?
- A. Time-critical, deliberate and in-depth.

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SHOP OPERATIONS





MAINTENANCE STRUCTURE





SHOP OPERATIONS

Terms and Acronyms

- DL: Deadline
 - To completely remove a piece of gear from service due to necessary repairs, damage, and/or malfunctions that has already or could eventually render it unsafe or impossible to operate

SHOP OPERATIONS

Terms and Acronyms (cont.)

- PMCS: Preventive Maintenance Checks and Services
 - Maintenance performed by mechanics and operators at intervals to preserve the life of components and assemblies.
 - Involves inspecting, cleaning, servicing, lubricating, adjusting, and minor repair.
- CM: Corrective Maintenance
 - Action taken to repair an item of equipment after failure which degrades its operational capabilities
- PEB: Pre Expended Bin
 - Location where high use, low cost items and broken units of issue are kept



MAINTENANCE STRUCTURE

MAINTENANCE OVERVIEW

- The Marine Corps utilizes different stages or levels of maintenance.
- These levels are identified by categories and further broken down into echelons.
 - Specific responsibilities are assigned to each category of maintenance
 - Categories are further subdivided into echelons to more accurately define capabilities and responsibilities
 - Maintenance is allocated according to personnel, tools, equipment, and parts availability



MAINTENANCE STRUCTURE

CATEGORIES AND ECHELONS OF MAINTENANCE

- Three categories and five echelons of maintenance
 - Organizational Maintenance
 - 1st and 2nd echelons of maintenance (EOM)
 - Intermediate Maintenance
 - 3rd and 4th echelons of maintenance (EOM)
 - Depot Maintenance
 - 5th echelon of maintenance (EOM)



MAINTENANCE STRUCTURE

ORGANIZATIONAL MAINTENANCE

- Maintenance performed by, and is the responsibility of, the using unit on its assigned equipment
- Operators (1st EOM) and mechanics (2nd EOM) share responsibilities for ensuring maintenance is performed
- Maintenance performed ensures equipment readiness through PMCS and CM



MAINTENANCE STRUCTURE

1ST EOM

- Performed by the user, wearer, or operator
- It includes the proper care, use, operation, cleaning, preservation, lubrication, and adjustment
- They are authorized to perform minor repairs, testing, and parts replacement according to applicable TMs (TM-10 series) and authorized repair parts and tools



MAINTENANCE STRUCTURE

2ND EOM

- Performed by specially trained personnel (mechanics).
- Authorized additional tools and parts, supplies, test equipment, and skilled personnel to perform maintenance beyond the capabilities and facilities of first echelon.
- Responsibilities include performance of scheduled maintenance, diagnosis and isolation of readily traced equipment malfunctions; replacement of major assemblies/components which can be readily removed/installed and do not require



MAINTENANCE STRUCTURE

INTERMEDIATE MAINTENANCE

- Maintenance performed by designated activities in support of using units
- Maintenance includes the calibration and repair or replacement of damaged or unserviceable parts and provides contact team support to using organizations
- Made up of 3rd and 4th echelons but may include some 2nd echelon to fulfill organizational overflow requirements



MAINTENANCE STRUCTURE

3rd EOM

- Diagnosis and isolation of equipment/modular malfunctions
- Adjustment and alignment of modules using test, measurement, and diagnostic equipment (TMDE)
- Repair by replacement of modular components and parts which do not require extensive post-maintenance testing or adjustment
- Limited repair of modular components requiring cleaning, seal Replacement, application of external parts, and repair kits
- Accomplishment of minor body work and

MAINTENANCE STRUCTURE

4TH EOM

- Associated with semi fixed or permanent shops of intermediate maintenance activities.
- Maintenance includes diagnosis, isolation, adjustment, calibration, alignment, and repair of malfunctions to internal parts
- Replacement of defective modular components not authorized at lower echelons
- Repair of major modular components by grinding or adjusting items such as valves, tappets, and seats
- Replace internal and external parts such as integrated and printed circuits
- Performance of heavy body, hull turret, and frame repair



MAINTENANCE STRUCTURE

DEPOT MAINTENANCE

- Maintenance requiring major overhaul or the complete rebuilding of parts, subassemblies, assemblies, and end items
 - Commonly referred to as rebuild centers
- Manufactures parts
- Performs required modifications and testing
- Performs maintenance beyond the responsibilities of lower echelons and provides them with technical assistance
- Provides stocks of serviceable equipment
- 5th echelon of maintenance



MAINTENANCE STRUCTURE

5TH EOM

- Maintenance normally performed by depot maintenance activities and at intermediate maintenance activities when authorized
- It includes overhaul or rebuild of end items and modular components
- Repairs which exceed the capability of lower echelon units where special environmental facilities or specific tolerances are required
- Special inspection and modification requiring extensive disassembly or elaborate test equipment



MAINTENANCE STRUCTURE

LEVELS OF MAINTENANCE

- The Marine Corps will soon structure its maintenance priority into what will be considered Levels of Maintenance (LOM, formerly categories and echelons)
 - These levels have been identified by name to clarify responsibilities according to the type and depth of maintenance being performed
 - Specific responsibilities are assigned to each level of maintenance
 - Maintenance is allocated according to personnel, tools, equipment, and parts availability



MAINTENANCE STRUCTURE

LEVELS OF MAINTENANCE

Operator/Crew (formerly Organizational consisting of 1st and 2nd echelons of maintenance)

- Maintenance performed by, and is the responsibility of, the using unit on its assigned equipment
- Includes the proper care, use, operation, cleaning, preservation, lubrication, and adjustment according to their maintenance allocation
- They have been given a more mechanical responsibility (from 2nd EOM) than in the past and are now authorized to perform minor corrective maintenance
 - Replacement of some easily accessible parts and components
- Their objective is to sustain their equipment in a mission capable status



MAINTENANCE STRUCTURE

LEVELS OF MAINTENANCE

Field (Formerly Intermediate consisting of 3rd and 4th EOM)

- 2nd EOM is now part of Field LOM and 4th EOM has left some of their responsibilities but moved to “Sustainment LOM”
- Maintenance performed by designated activities (trained technicians/mechanics) in support of using units
- Includes the calibration and repair or replacement of damaged or unserviceable parts/components and provides contact team support to using organizations
- Authorized an extended inventory of tools (above the Operator/Crew level) to fulfill maintenance requirements
- Their objective is to return equipment to a mission capable status

MAINTENANCE STRUCTURE

LEVELS OF MAINTENANCE

Sustainment (formerly Depot consisting of 5th EOM)

- Now utilizes the flexibility and mobility of 4th EOM as well
- Maintenance requiring major overhaul or the complete rebuilding of components, subassemblies, assemblies, and end items
- Manufactures parts
- Performs in depth modifications and testing
- Performs maintenance beyond the responsibilities of lower levels and provides them with technical assistance
- Provides stocks of serviceable equipment
- Their objective is to sustain equipment throughout its lifecycle



MAINTENANCE STRUCTURE

MAINTENANCE STRUCTURE REVIEW

- The three Categories of Maintenance
- The five Echelons of Maintenance
- The three Levels of Maintenance



MAINTENANCE STRUCTURE

QUESTIONS

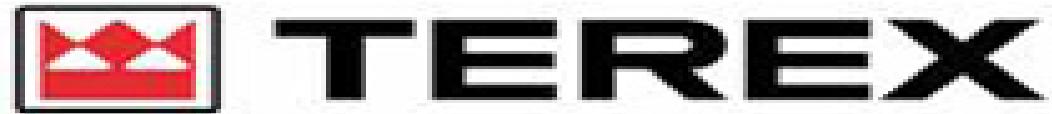
- Q. Which echelon of Maintenance is the most important?
- A. 1st echelon.
- Q. What level of Maintenance sustains stocks of serviceable equipment?
- A. Sustainment level of Maintenance.

MAINTENANCE STRUCTURE





ENGINEER EQUIPMENT



JOHN DEERE

SG
Pg #35



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ENGINEER EQUIPMENT

**JOHN DEERE
TRAM**



5/25/17



ENGINEER EQUIPMENT

TRAM

DESCRIPTION AND FUNCTION

- Tractor, Rubber-Tired, Articulated Steering, Multipurpose
- Diesel-powered, four-wheel drive.
- Capable of operating in rough terrain and in up to 60 inches of water.
- Outfitted with a 2-1/2 Yard 4-In-1 Multi-Purpose Bucket, a 10,000 pounds Forklift Attachment
- Maximum speed 24 mph (39 km/h)
- Manufactured by John Deere Co.



ENGINEER EQUIPMENT

**JOHN DEERE
850JR MCT**



5/25/17



ENGINEER EQUIPMENT

MEDIUM CRAWLER TRACTOR (MCT) 850JR

DESCRIPTION AND FUNCTION

- Diesel-engine driven, militarized crawler type, medium-drawbar pull tractor.
- Equipped with Roll Over Protection Structure (ROPS) and Falling Objects Protective Structure (FOPS)
- Hydraulically powered semi-U (straight) type blade with a maximum drawbar pull of 35,000 pounds.
- Equipped with all components necessary to enable the tractor to function the following attachments: a 3-shank ripper or a rear-mounted winch and drawbar/towing coupler.
- Manufactured by John Deere Co.



ENGINEER EQUIPMENT

**CATERPILLAR
420 BACKHOE**



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ENGINEER EQUIPMENT

420EIT BACKHOE LOADER

DESCRIPTION AND FUNCTION

- Highly mobile, light weight, rubber tired
- Equipped with a front-end loader and backhoe excavator
- Capable of operating hydraulic power tools
- Reaches road speeds in excess of 20 mph



ENGINEER EQUIPMENT



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ENGINEER EQUIPMENT

120M GRADER

DESCRIPTION AND FUNCTION

- Self-propelled grading machine powered by a diesel engine.
- Rubber tires, six-wheel drive, and an articulated frame with front-wheel steer design
- Equipped with a 12' blade with a maximum shoulder reach of 6' outside the wheels and has a maximum lift above ground of 16".
- Reconfigurable to accept an armored cab kit. The advanced joy stick control system replaces the traditional array of levers and steering wheel, which greatly simplifies motor grader operation by placing total machine, drawbar, and moldboard control into both of the operator's hands.
- Applications of the 120M include grading coarse and fine soil, creating low and high bank slopes, flat and V-ditches, scarifying, removing snow, and building and maintaining roads and airfields.



ENGINEER EQUIPMENT

**TEREX
5K LCRTF**



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ENGINEER EQUIPMENT

TEREX 5K LCRTF

DESCRIPTION AND FUNCTION

- Light Capability Rough Terrain Forklift
- Diesel powered, air transportable used for lifting palletized loads up to 5,070 pounds.
- Equipped with a telescopic boom, 2-wheel, 4-wheel, and crab steering modes.
- Required to clear landing zones of supplies and equipment, to load and unload combat vehicles, aircraft, and ISO containers.
- Manufactured by Terex



ENGINEER EQUIPMENT

**SKYTRACK
EBFL MMV**



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ENGINEER EQUIPMENT

SKYTRACK EBFL MMV

DESCRIPTION AND FUNCTIONS

- Extendable Boom Fork Lift
- Military Millennium Vehicle (MMV)
- Diesel powered, for lifting loads up to 11,000 pounds
- Air transportable, rough-terrain, self-deployable material handler.
- Primary function is to provide operating forces the capability to move/load/unload supplies, equipment, vehicles, containers, and palletized cargo from amphibious/merchant ships, aircraft, and vehicles over beaches as well as inland via unimproved/hard surfaces.



ENGINEER EQUIPMENT

**CASE
1150
DOZER**



5/25/17



ENGINEER EQUIPMENT

1150 DOZER

DESCRIPTION AND FUNCTION

- Full-tracked, diesel engine driven tractor
- Hydraulically operated angle blade and winch
- Air transportable
- Used for earthmoving and general construction work.
- Manufactured by Case
- Travels up to 6.3 mph (10 km/h).



ENGINEER EQUIPMENT

ENGINEER EQUIPMENT REVIEW

- TRAM
- MCT
- Backhoe loader
- Grader
- Terex
- MMV
- 1150



ENGINEER EQUIPMENT

QUESTIONS

- Q: What is the maximum lifting capacity of the Terex 5K LCRTF?
- A: 5070 lbs.
- Q: What company manufactures the TRAM?
- A: John Deer

ENGINEER EQUIPMENT

Break





TECHNICAL MANUAL





TECHNICAL MANUAL

INTRODUCTION

- Every piece of equipment in the Marine Corps utilizes Technical Manuals (TM) and repair parts lists (SL-4, PC, etc.)
 - These manuals are necessary for performing maintenance and ordering parts
 - TMs provide step by step maintenance procedures in order to perform the maintenance accurately and efficiently.
 - Parts lists provide requisitioning data for every component or item on their associated piece of gear



TECHNICAL MANUAL

TECHNICAL MANUAL (TM)

- Ensures the correct action is taken to solve or prevent problems in a timely manner
- TMs provide the mechanic and operator with PMCS, troubleshooting, and CM procedures to include:
 - Inspections
 - Adjustments
 - Preventive maintenance intervals
 - Troubleshooting and testing
 - Removal/installation of parts
 - Disassembly/reassembly of components
 - Special tools and TMDE



TECHNICAL MANUAL

TECHNICAL MANUAL

- With new pieces of gear come new technical manuals (TM)
 - Some may be constructed differently than others but they all cover the same basic concept as previously explained
- New TMs are generally designed by the Manufacturer of the piece of equipment
 - The Marine Corps adds a “Short Title” and information applicable to our supply system and maintenance procedures.



TECHNICAL MANUAL

TECHNICAL MANUAL

Identifying Front Cover Information

- **Short Title** = TM 11503A-OI/4
- **TM** = indicates this is a Technical Manual
- **11503** = Item Designator number (MCT)
- **A**= indicates this TM covers a particular model. Lack of this indicates that more than one model is covered.
- **OI**= This manual covers Organizational(Operator/Crew) and Intermediate(Field) maintenance.

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TECHNICAL MANUAL

TECHNICAL MANUAL

TM 11503A-OI/4

**850JR
Crawler Dozer
Repair**

**TECHNICAL MANUAL
850JR MCT Repair Manual**
TM10780 15JAN09 (ENGLISH)

For complete service information also see:
850JR Crawler Dozer Operation and Test . . . TM10779
850JR Crawler Dozer Operator's Manual . . . OMT242091
9.0L OEM Diesel Engines—Base Engine
Repair CTM400
9.0L Diesel Engines—Level 14 Electronic
Fuel System with Denso HPCR CTM385
Undercarriage Appraisal Manual TM10989

**Worldwide Construction
And Forestry Division**
LITHO IN U.S.A.

PCN 500 115039 00

TM 10794B-OI/A

U.S. MARINE CORPS TECHNICAL MANUAL

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE MANUAL
WITH REPAIR PARTS LIST

FOR

FORKLIFT, EXTENDABLE BOOM (EBFL)

MODEL: MMV (TIER 2)
NSN: 3930-01-508-0886



MARINE CORPS SYSTEMS COMMAND
QUANTICO, VA 22134-6050

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**FEBRUARY 2008
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TECHNICAL MANUAL

TECHNICAL MANUAL

- The Medium Crawler Tractor utilizes multiple technical manuals to cover various maintenance aspects
 - Operation and test (TM 11503A-OI/3)
 - Theories of operation
 - Identifying problems using common sense and diagnostic trouble codes
 - Repair (TM 11503A-OI/4)
 - Repair of components
 - CTM (Component Technical Manual)
 - Repair of major assemblies
 - Engine, in-depth fuel system, winch

TECHNICAL MANUAL

TECHNICAL MANUAL

How to Read

- The manufacturer TMs seem less inclusive than older Marine Corps TMs but goes farther into detail and are seemingly simpler to read and comprehend. (e.g. Separate manuals for winch, ripper, etc.)
- Introductions, safety information, and a table of contents are presented within the first section/s of the TM

SECTION 04—Engine

MCT TECHNICAL MANUAL

Contents

SECTION 00—General Information

- Group 0001—Safety
- Group 0003—Torque Values

SECTION 01—Tracks

- Group 0130—Track System

SECTION 02—Axles and Suspension Systems

- Group 0201—Drive Axle Housing and Support
- Group 0250—Axle Shaft, Bearings and Reduction Gears

SECTION 03—Transmission

- Group 0315—Control Linkage
- Group 0360—Hydrostatic System

SECTION 04—Engine

- Group 0400—Removal and Installation

SECTION 05—Engine Auxiliary Systems

- Group 0505—Cold Weather Starting Aid
- Group 0510—Cooling System
- Group 0515—Engine Speed Control
- Group 0530—External Exhaust Systems
- Group 0560—External Fuel Supply Systems

SECTION 07—Dampener Drive

- Group 0752—Elements

SECTION 11—Park Brake

- Group 1100—Park Brake
- Group 1115—Control Linkage
- Group 1160—Hydraulic System

SECTION 15—Equipment Attaching

- Group 1511—Drawbar

SECTION 17—Frames, Chassis, or Supporting Structure

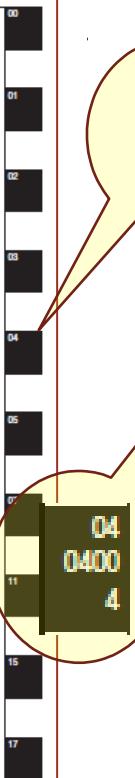
- Group 1740—Frame Installation
- Group 1746—Frame Bottom Guards

SECTION 18—Operator's Station

- Group 1800—Removal and Installation

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Removal and Installation

21. Disconnect positive battery cable (9) and ground strap (10) from starter.

9—Positive Battery Cable
10—Ground Strap



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22. Close fuel shutoff valve (30). See Fuel Drain and Shutoff Valve. (Operator's Manual.)

NOTE: There is an alternate fuel shutoff valve (11) below fuel tank at rear of machine, accessible by removing rear access cover.

11—Alternate Fuel Shutoff Valve
12—Fuel Supply Line
13—Fuel Return Line
30—Fuel Shutoff Valve



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TECHNICAL MANUAL

TM 10734B-01/A

M

Table of Content

- located in the front of the publication
- Chapters divide the information
- Each Chapter is identified by a Chapter number located on the left
- If you cannot find the information in the *Table of Contents*, refer to the *alphabetical Index* at the back of the manual.

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TECHNICAL MANUAL

- Every piece of equipment in the Marine Corps utilizes Technical Manuals (TM) and repair parts lists (SL-4, PC, etc.)
- These manuals are necessary for performing maintenance and ordering parts
- TMs provide step by step maintenance procedures in order to perform the maintenance accurately and efficiently.
- Parts lists provide requisitioning data for every component or item on their associated piece of gear

TECHNICAL MANUAL

TECHNICAL MANUAL REVIEW

- What a TM covers.
- Short titles.
- How to read TM's.



TECHNICAL MANUAL

QUESTIONS

- **Q:** What does 11503 mean in a short title?
- **A:** This is the ID number.
- **Q:** What does a parts list provide the mechanic?
- **A:** Provides the requisitioning data for every component or item on that associated piece of gear.



TECHNICAL MANUAL





RECORDS AND FORMS



RECORDS AND FORMS

RESPONSIBILITIES

- It is your responsibility to ensure you are using the proper record or form and that you are using it correctly.
- TM 4700-15/1 and UM 4790-2C are the references that provide guidance in regards to the use of maintenance records and forms.
 - TM 4700-15/1 provides instructions for the preparation, use, and disposition of required records and forms.
 - UM 4790-2C provides functional procedures of the maintenance Process.



RECORDS AND FORMS

NAVMC 10560

PURPOSE

- Provides a checklist for performing and recording preventive maintenance checks and services (PMCS) and Limited Technical Inspections (LTI).
- The equipment owner, user or custodian is responsible for initial preparation to include the heading

RECORDS AND FORMS

NAVMC 10560

TYPES

- Acceptance LTI's - Performed by maintenance personnel upon receipt of equipment and prior to placing the equipment in service.
- LTI's prior to Repair - The equipment chief will ensure that any equipment requiring repairs is inspected and results recorded on the NAVMC 10560 before the equipment is repaired.
- Preventive Maintenance - The maintenance unit, with the assistance of the operator performs required services, records them on the NAVMC 10560, and signs the worksheet indicating that the services have been performed.

SERVICING SYMBOLS (SS)
 A - ADJUST
 C - CLEAN
 I - INSPECT
 S - SERVICE
 T - TIGHTEN

WORKSHEET FOR PREVENTIVE MAINTENANCE
 AND TECHNICAL INSPECTION FOR ENGINEER EQUIPMENT

APPLICABLE REFERENCES (SEE INSTRUCTIONS ON PAGE 6)
 TM 4700 - 15/1_ (TACTICAL EQUIPMENT RECORD PROCEDURES)

LEGEND FOR MARKING (SS)
 N/A - NOT APPLICABLE
 M - MISSING
 ✓ - SATISFACTORY
 X - ADJUSTMENT REQUIRED
 XX - REPAIR REQUIRED
 XXX - REPLACEMENT REQUIRED
 D - IMMEDIATE D/L
 U - UNSATISFACTORY
 MR - MODIFICATIONS REQUIRED

A

NOMENCLATURE Medium Crawler Tractor

MAKE John Deere

MODEL 850 JR

ORGANIZATION 2D Maintenance BN

DATE 9249

HOURS 832

MILES N/A

REGISTRATION NO. 640616

ENGINE MAKE / MODEL
(IF APPLICABLE, LIST BOTH ENGINES)ENGINE SERIAL NO.
(IF APPLICABLE, LIST BOTH ENGINES)

ATTACHMENTS N/A

1. John Deere / 6090

1. 08Z40429

MAKE AND MODEL N/A

2. (USE ADDITIONAL FORM)

2. (USE ADDITIONAL FORM)

SERIAL NO. N/A

INDICATE PURPOSE

TECHNICAL INSPECTION (TI)

X LIMITED TECH INSPECTION (LTI)

HOURLY PM HRS.

OTHER (STATE)

EQUIPMENT RECORD
FOLDER

PUBLICATIONS
AVAILABLE

APPEARANCE

OPERATOR'S
DAILY PM

N/A FIRE EXTINGUISHER

N/A TOOLS AND EQUIPMENT

REMARKS AND RECOMMENDATIONS / DISPOSITION INSTRUCTIONS

B

ITEM COST (CURRENT)

\$

EQUIPMENT AGE

YEARS ____ MONTHS ____

REPAIR LIMIT

% ONE TIME COST LIMIT

EST. COST THIS REPAIR

\$

CONDITION CODE

| D | S S | ENGINE AND POWER UNIT | D | S S | ENGINE AND POWER UNIT (ELECTRICAL SYSTEM) | |
|----|--------|--|----|--------|--|--|
| 1 | XXX | CYLINDER HEAD (GASKET LEAKS, CRACKS) | 26 | Ü | EMERGENCY SHUTDOWN DEVICES (CONNECTIONS, LINKAGE) | |
| 2 | Ü | EXHAUST SYS (MANIFOLD, MUFFL., CONNECTIONS, PIPE) EXHAUST BACK PRESSURE PSI (Hg) SMOKE ANALYSIS, (BLACK, BLUE, WHITE) | 27 | N/A | SPARK PLUGS (CRACKS, DISCOLORATION, FOULING) | |
| 3 | Ü | VALVE MECHANISM (COVERS, SPRINGS, ROCKER ARMS, PUSH RODS) CLEARANCE | 28 | Ü | BATTERY (CASE, TERMINALS) SPECIFIC GRAVITY | |
| 4 | N/A | COMPRESSION TEST (T1 OR MALFUNCTION ONLY) | 29 | Ü | BATTERY (BOX, HOLD DOWNS, CABLES, CONNECTIONS) | |
| | | | 30 | XXX | BATTERY SLAVE RECEPTACLE Cap missing | |
| 5 | Ü | CRANKCASE (LEAKS, OIL LEVEL) BREATHER (CLEAN) | 31 | Ü | BATTERY CHARGING GENERATOR / ALTERNATOR (MOUNTING, CONNECTION, BRUSHES COMMUTATOR) OUTPUT 26V 1000 RPM | |
| 6 | Ü | OIL FILTER / COOLERS (LEAKS, CLEAN) | 32 | Ü | VOLTAGE REGULATOR (SEAL CONNECTIONS, GROUND) | |
| 7 | Ü | OIL PUMP PRESSURE/TEMPERATURE 28 PSI 210 F | 33 | N/A | DISTRIBUTOR / MAGNETO (CAP, ROTOR, POINTS, MOUNTING, CONNECTIONS) | |
| 8 | Ü | ANTI FREEZE (SPECIFIC GRAVITY) PROTECTED TO 40 F | 34 | N/A | IGNITION COIL (MOUNTING, CABLE) | |
| 9 | Ü | WATER PUMP, FAN, SHROUD, (LEAKS, ALIGNMENT, MOUNTING) | 35 | Ü | STARTER (MOUNTING, CONNECTIONS, BRUSHES, COMMUTATOR) | |
| 10 | Ü | RADIATOR (CORE, SHUTTERS, HOSES, CAP) (LEAK, RESTRICTION, DAMAGE) | 36 | XX | LIGHTS (CONNECTIONS, MOUNTING) DASH, BLACKOUT, HEAD, TAIL, CLEARANCE, WORKING Broken wire R/S | |
| 11 | X | ACCESSORY DRIVE BELTS AND PULETS (CRACKS, ROT, ALIGNMENT) | 37 | Ü | WIRING HARNESS (CONNECTION, INSULATION) | |
| 12 | Ü | GOVERNOR AND LINKAGE (LINKS, ALIGNMENT, OPERATION) | 38 | Ü | SWITCHES (MOUNTING, CONNECTIONS) | |
| 13 | N/A | OVERSPEED GOVERNOR (CONNECTIONS, OPERATION) | 39 | Ü | METERS (VOLT, AMP, HOUR, ODOMETER, TACHOMETER, SPEEDOMETER) (MOUNTING, CONNECTIONS) | |
| 14 | Ü | AIR BOX (DRAINS RESTRICTIONS, GASKETS) AIR BOX PRESSURE ____ PSI (Hg) | 40 | | | |
| 15 | XXX | <u>AIRCLEANER</u> , PRECLEANERS (LEAKS, CONNECTIONS, MOUNTING, RESTRICTIONS) | 41 | | | |
| 16 | N/A | CARBURETOR / LINKAGE (LEAKS, ALIGNMENT) | 42 | | | |
| 17 | Ü | BLOWER TURBOCHARGER (LEAKS, SEALS, MOUNTING, SCREEN) | 43 | | | |
| 18 | Ü | INJECTORS, INJECTOR PUMPS (LEAKS, FILTERS, RESTRICTIONS) | E | S S | POWER TRAINS | |
| 19 | Ü | FUEL TANK, CAP, MOUNTING (VALVES, LINES, TRAPS, SCREEN) | | | | |
| 20 | Ü | FUEL FILTER (LEAKS, RESTRICTION, DRAIN) | 1 | | UNIVERSAL JOINTS, DRIVE SHAFTS | |
| 21 | Ü | FUEL PUMPS (HOUSING, LINES, CONNECTIONS, SEDIMENT BOWL) | 2 | | GEAR HOUSINGS (CASES, GASKETS, SEALS, LEAKS, OIL LEVEL) | |
| 22 | Ü | FUELS LINES / CONNECTIONS (CRACKS, LEAKS) | 3 | | GEARS AND PINIONS | |
| 23 | Ü | GAUGES (FUEL, OIL TEMP, PRESSURE) OPERATION | 4 | | BEARINGS, SHAFTS AND DRUMS | |
| 24 | Ü | STARTING AID (CONNECTIONS, LINES) | 5 | | TRANSMISSION, TRANSFER CASES (GASKETS, SEALS, LEAKS, OIL LEVEL) HARD TO SHIFT, NOISE | |
| 25 | N/A | ENGINE AIR COMPRESSOR (GASKETS, SEALS, BREATHERS) | 6 | | DRIVE SPROCKETS (CHAINS, BELTS, PULLES) | |

| E | S S | POWER TRAINS (CONTINUED) | F | S S | FRAME AND SUSPENSION (CONTINUED) |
|----|--------|---|----|--------|---|
| 7 | | STEERING AND TRAVEL CLUTCHES | 8 | | BUCKET / BLADE LIFT ARMS |
| 8 | | FINAL DRIVE DIFFERENTIAL (HOUSING, GASKETS, SEALS, OIL LEVEL) | 9 | | BUCKET / BLADE SIDE ARMS |
| 9 | | POWER TAKE OFF UNIT | 10 | | TIE RODS, LINKAGE, BOOTS AND SEALS |
| 10 | | JAW OR PIN CLUTCH | 11 | | FULCRUM ARMS, REACH ARMS, LINKAGE |
| 11 | | OPERATING CLUTCHES AND BRAKES | 12 | | CAB HOUSING (PANELS, DOORS, BRACKET, HINGES, FASTENERS) |
| 12 | | TRAVEL AND SWING LOCK | 13 | | BASE SKIDS (BENTMEMBERS, WELDS, LIFTING DEVICES) |
| 13 | | SERVICE BRAKES | 14 | | LEVELS, PEDALS, LINKAGE, CABLES, CONTROLS |
| 14 | | PARKING / EMERGENCY BRAKES | 15 | | STEERING OR LEANING WHEEL |
| 15 | | SHOES, PISTONS, BANDS | 16 | | STEERING GEAR ASSEMBLY |
| 16 | | DRUMS, DISCS | 17 | | BOOSTER STEERING ASSEMBLY |
| 17 | | PEDALS, LINKAGE, CABLE, LINES AND FITTINGS | 18 | | SWING LOCK |
| 18 | | MASTER CYLINDER (POWER PACK) (SLAVE CYLINDER) | 19 | | HYDRAULIC CYLINDERS (LEAKS, SEALS, DAMAGED) |
| 19 | | AIR TANK | 20 | | HYDRAULIC LINES AND CONNECTIONS (LEAKS, DAMAGE) |
| 20 | | AIR VALVES, LINES, FITTINGS | 21 | | MAST ASSEMBLY, BOOM |
| 21 | | | 22 | | GANTRY SHEAVES, CABLES, PINS, LOCKS |
| 22 | | | 23 | | SAFETY CHAINS |
| 23 | | | 24 | | TRACK ASSEMBLY (PLATES, LINKS, BUSHINGS, PINS, IDLER, ROLLERS, SPRINGS, BUSHINGS) |
| F | S S | SKIDS / FRAME AND SUSPENSION | 25 | | TRACK TENSION |
| | | | 26 | | FIFTH WHEEL, TOW, HITCH, PINTLE, HOOK |
| 1 | | FRAME (CRACKS, WELDS, ALIGNMENT) | 27 | | YOKE ASSEMBLY |
| 2 | | GUARDS AND OUTRIGGERS (CYLINDERS, HOSES) | 28 | | TAILGATE, BOWL, HINGE PINS, EJECTOR, APRON |
| 3 | | SPRINGS, EQUALIZERS, STABILIZERS | 29 | | STOPLOCK SPRINGS |
| 4 | | TIRES (PRESSURE, CONDITION) | 30 | | CENTER PIN OR GUDGEON |
| 5 | | FRONT AXLE ASSEMBLY, WHEELS (BEARINGS, MOUNTS, BALL JOINTS) | 31 | | AIR LINES AND CONNECTIONS |
| 6 | | REAR AXLE ASSEMBLY, WHEELS (BEARINGS, MOUNTS, BALL JOINTS) | 32 | | DUCT, DUCT HOUSING, CABLE ASSEMBLY |
| 7 | | 'A' FRAME OR YOKE, PUSH BEAMS | 33 | | PLENUMS |

| G | S | ATTACHMENTS / BLADES / CUTTING EDGES (Check applicable block in lines 1 through 5) | | | H | S | PUMPS AND COMPRESSORS (CONTINUED) | |
|----|-----|---|--|--|----|---|---|--|
| 1 | Ü | <input type="checkbox"/> AUGER | <input type="checkbox"/> BACKHOE | <input checked="" type="checkbox"/> BLADES | 12 | | CYLINDER HEADS (GASKETS, CRACKS, LEAKS) | |
| 2 | N/A | <input type="checkbox"/> BUCKET | <input type="checkbox"/> BUCKET MULTIPURPOSE | <input type="checkbox"/> CLAMSHELL | 13 | | CRANKCASE (LEAKS, OIL LEVEL) | |
| 3 | N/A | <input type="checkbox"/> COMPACTOR VIBRATOR | <input type="checkbox"/> DRAGLINE | <input type="checkbox"/> FORKS | 14 | | GAUGES (OIL, AIR) | |
| 4 | N/A | <input type="checkbox"/> HAMMER IMPACT | <input type="checkbox"/> WINCH | <input type="checkbox"/> PILE DRIVER | 15 | | UNLOADERS | |
| 5 | N/A | <input type="checkbox"/> RIPPER | <input type="checkbox"/> SCRAPERS | <input type="checkbox"/> | 16 | | LINE OILERS (CONNECTIONS, STRAINERS) | |
| 6 | Ü | DRUMS, SHEAVES, CABLES, LEADS AND GUIDES | | | 17 | | SPRINKLING SYSTEM (TANKS, LINES, MOUNTING) | |
| 7 | Ü | CUTTING EDGES, CORNER SHOES, BOOTS, END BITS, TEETH | | | 18 | | CONTROLS | |
| 8 | N/A | SKIPPER SHAFT AND SADDLE BLOCK ASSEMBLY | | | 19 | | TOOLS / ACCESSORIES (PNEUMATIC TOOL OUTFIT) | |
| 9 | N/A | TAGLINE, GANTRY, HAMMER LEADS, BLOCKS | | | 20 | | | |
| 10 | Ü | DRAWBAR, SCARIFIER, CIRCLE | | | 21 | | | |
| 11 | Ü | HYDRAULIC LINES / CYLINDERS | | | 22 | | | |
| 12 | | | | | | | MOBILE ELECTRIC POWER GENERATING SOURCE (Complete engine and power unit section before proceeding) | |
| 13 | | | | | | | | |
| H | S | PUMPS AND COMPRESSORS WATER / HYDRAULIC / PNEUMATIC | | | 1 | | GOVERNOR ASSEMBLY (MODULES, TERMINALS, ADJUSTMENTS, CONNECTORS) | |
| 1 | | RESERVOIR, TANK (LEAKS, CRACKS, WELDS, BREATHERS, FILTERS, STRAINERS) | | | 2 | | ALTERNATOR ASSEMBLY (BEARINGS, STARTER, ROTOR, DIODES, COOLING FAN, INTAKES, FLEXIBLE COUPLING) | |
| 2 | | PUMP (MOUNTING, HOUSING) OUTPUT ____ PSI ____ GPM | | | 3 | | ELECTRIC / ELECTRONIC WIRING HARNESES, CONNECTORS | |
| 3 | | RELIEF VALVES ____ PSI | | | 4 | | PLUG-IN MODULES, LOAD CONTACTORS | |
| 4 | | CONTROL VALVES (LINKAGE, LEVERS) CUT IN PRESSURE ____ PSI CUT OUT PRESSURE ____ PSI | | | 5 | | PRINTED CIRCUIT BOARDS (CRACKS, DIRT, CONFORMAL COATING, COMPONENT MOUNTING) | |
| 5 | | VALVES (FLOW, CHECK) | | | 6 | | CONTROL CABINET (MOUNTS, CONNECTORS, COMPONENT MOUNTING) | |
| 6 | | CYLINDERS (LEAKS, MOUNTING) | | | 7 | | PROTECTIVE CIRCUIT (OPERATION, TRIP POINT RANGES) | |
| 7 | | HOSES AND CONNECTIONS (LEAKS, CRACKS) | | | 8 | | CABLES (REMOTE OPERATION, PARALLELING, CONNECTIONS) | |
| 8 | | FILTERS / STRAINERS | | | 9 | | HOUSING (SEALS, COMPARTMENTS, FASTENERS, MARKINGS) | |
| 9 | | SHAFT, COUPLING, BEARINGS | | | 10 | | AUXILIARY WINTERIZATION KIT (COMPLETENESS, OPERATION) | |
| 10 | | IMPELLER, DIAPHRAGM | | | 11 | | TERMINAL BOARD | |
| 11 | | INTER COOLER, RELIEF VALVE ASSEMBLY, LINES | | | 12 | | VOLTAGE REGULATOR | |
| | | | | | 13 | | RELAYS | |

| J | S S | REFRIGERATION / AIR CONDITIONING | L | S S | CHAIN AND POWER SAW (Complete engine and power unit section before proceeding) |
|----|--------|---|----|--------|---|
| 1 | | COMPRESSOR | 1 | | TABLE TILTING SCREW |
| 2 | | BELTS, PULLEYS, SHEAVES | 2 | | COLUMN BASE AND FRAME |
| 3 | | METERING DEVICE | 3 | | SPROCKET AND CHAIN (OILER) |
| 4 | | EVAPORATOR COIL | 4 | | SAW GUARDS |
| 5 | | CONDENSER COIL | 5 | | MITRE GAUGE |
| 6 | | TEMPERATURE CONTROLS | 6 | | BLADES (CONDITION) |
| 7 | | SIGHT GLASS | 7 | | STARTER RECOIL SYSTEMS |
| 8 | | GASKET, DOOR | M | S S | MARINE EQUIPMENT (Complete engine and power unit section before proceeding) |
| 9 | | REFRIGERANT (SHORT, HIGH) | | | |
| 10 | | LEAKS (OIL, REFRIGERANT) | 1 | | HULL (LEAKS, CRACKS, BROKEN, MISSING) |
| 11 | | TIMER DEFROST | 2 | | ELECTRICAL (RADAR, RADIO, LIGHTS) |
| 12 | | VALVES (SERVICE, PRESSURE, REGULATING, SOLENOID, CHECK) | 3 | | CREW SERVED ARMAMENT |
| 13 | | RELAYS / CONTACTORS | 4 | | PROPELLUTION EQUIPMENT |
| 14 | | CONTROL BOX | 5 | | TRAILER (TIRES, FRAME, LIGHTS) |
| 15 | | HOUSINGS | 6 | | |
| 16 | | STATOR / ROTOR / END BELLS / BEARINGS | 7 | | |
| 17 | | MOUNTINGS | 8 | | |
| 18 | | CAPACITORS | 9 | | |
| 19 | | ELECTRICAL SWITCHES AND CONNECTORS AND WIRING | 10 | | |
| K | S S | WATER SUPPLY EQUIPMENT (Check Power Supply, Pumps first) | 11 | | |
| 1 | | CHLORINE, CYLINDER OR BAG CHLORINE (TEST FEED) | 12 | | |
| 2 | | PRESSURE REGULATOR (CHLORINE) | 13 | | |
| 3 | | VALVES AND STRAINERS | 14 | | |
| 4 | | FILTER SECTION | 15 | | |
| 5 | | TANKS | 16 | | |
| | | | 17 | | |

INSTRUCTIONS

THIS FORM SHALL BE PREPARED IN ADVANCE IN ACCORDANCE WITH TM 4700-15/1

1. SECTION A will be completed utilizing the information contained in the Equipment Record Folder or other unit records. Verification shall be obtained from the Equipment Data Plate.
2. SECTION B shall contain any special instructions as to the conduct of the inspection or special areas of interest.
3. SECTION C shall be completed utilizing the information contained on NAVMC 696D instructions as appropriate shall be entered.
4. SECTION N will be used to list the required modification for this equipment.
5. For detailed instructions on preventive maintenance services and repairs refer to equipment's TM and LT. A complete listing of applicable publications is contained in SI 1-2 and SI 1-3

| | | | |
|---|--|--|--|
| O | <p style="text-align: center;">INSTRUCTIONS</p> <p style="text-align: center;">THIS FORM SHALL BE PREPARED IN ADVANCE IN ACCORDANCE WITH TM 4700-15/1</p> <p>1. SECTION A will be completed utilizing the information contained in the Equipment Record Folder or other unit records. Verification shall be obtained from the Equipment Data Plate.</p> <p>2. SECTION B shall contain any special instructions as to the conduct of the inspection or special areas of interest.</p> <p>3. SECTION C shall be completed utilizing the information contained on NAVMC 696D instructions as appropriate shall be entered.</p> <p>4. SECTION N will be used to list the required modification for this equipment.</p> <p>5. For detailed instructions on preventive maintenance services and repairs refer to equipment's TM and LT. A complete listing of applicable publications is contained in SL 1-2 and SL 1-3.</p> | | |
| | <p>MECHANIC / OPERATOR (NAME, GRADE, ORGANIZATION)</p> <p>Your Signature , PVT, 2ND Maint</p> <p>MAINTENANCE / OPERATIONS CHIEF (NAME, GRADE, ORGANIZATION)</p> <p>Samuel D. Adams GySgt, 2ND Maint</p> <p>ERO NO</p> <p>DATE</p> <p>9249</p> | | |
| P | <p>MAINTENANCE / OPERATIONS OFFICER AS REQUIRED (NAME, GRADE, ORGANIZATION)</p> | | <p>RESPONSIBLE OFFICER AS REQUIRED (NAME, GRADE, ORGANIZATION)</p> |

SERVICING SYMBOLS (SS)
 A - ADJUST
 C - CLEAN
 I - INSPECT
 S - SERVICE
 T - TIGHTEN

WORKSHEET FOR PREVENTIVE MAINTENANCE AND TECHNICAL INSPECTION FOR ENGINEER EQUIPMENT

APPLICABLE REFERENCES (SEE INSTRUCTIONS ON PAGE 6)
 TM 4700 - 15/1 (TACTICAL EQUIPMENT RECORD PROCEDURES)

A

| | | | | | | |
|---|---|---|-------------------------------------|---|--|--|
| NOMENCLATURE Medium Crawler Tractor | | MAKE John Deere | MODEL 850 JR | | | |
| ORGANIZATION 2D Maintenance BN | | DATE 9249 | HOURS 832 | | | |
| ENGINE MAKE / MODEL (IF APPLICABLE. LIST BOTH ENGINES) | | ENGINE SERIAL NO. (IF APPLICABLE. LIST BOTH ENGINES) | ATTACHMENTS Winch | | | |
| 1. John Deere / 6090 (USE ADDITIONAL FORM) | 1. 08Z40429 (USE ADDITIONAL FORM) | MAKE AND MODEL John Deere / 850 JR | | | | |
| 2. (USE ADDITIONAL FORM) | 2. (USE ADDITIONAL FORM) | SERIAL NO TO850JR 175862 | | | | |
| <input type="checkbox"/> EQUIPMENT RECORD FOLDER | | <input type="checkbox"/> PUBLICATIONS AVAILABLE | <input type="checkbox"/> APPEARANCE | <input type="checkbox"/> OPERATOR'S DAILY PM | <input type="checkbox"/> FIRE EXTINGUISHER | <input type="checkbox"/> TOOLS AND EQUIPMENT |

LEGEND FOR MARKING (SS)
 N/A - NOT APPLICABLE
 M - MISSING
 ✓ - SATISFACTORY
 X - ADJUSTMENT REQUIRED
 XX - REPAIR REQUIRED
 XXX - REPLACEMENT REQUIRED
 D - IMMEDIATE D/L
 U - UNSATISFACTORY
 MR - MODIFICATIONS REQUIRED

| |
|--------------------------------|
| INDICATE PURPOSE |
| TECHNICAL INSPECTION (TI) |
| LIMITED TECH. INSPECTION (LTI) |
| HOURLY PM HRS. |
| OTHER (STATE) |

X

REMARKS AND RECOMMENDATIONS / DISPOSITION INSTRUCTIONS

D-1 Cylinder head gasket leaks
 D-11 Fan belts loose
 D-15 Air-cleaner Dirty
 D-30 Slave receptacle cap missing
 D-36 Broken wire to R/S blackout light

B

C

| | | | | | |
|---------------------------|---|--------------|------------|-----------------------------|----------------|
| ITEM COST (CURRENT) \$ | EQUIPMENT AGE YEARS ____ MONTHS ____ | REPAIR LIMIT | | EST. COST THIS REPAIR \$ | CONDITION CODE |
| | | % ONE TIME | COST LIMIT | | |

RECORDS AND FORMS

RECORDS AND FORMS REVIEW

- References for records and forms
- Purpose of the NAVMAC 10560
- How to fill out a NAVMAC 10560 (LTI Sheet)

RECORDS AND FORMS

QUESTIONS

- **Q:** What are the two references used for records and forms?
- **A:** UM 4790.5c and TM 4700-15/1H
- **Q:** What form provides a checklist for performing and recording preventative maintenance checks and services (PMCS) and Limited technical inspections (LTI)?
- **A:** NAVMC10560 (LTI sheet)

SHOP
OPERATIO
NS

RECORDS AND FORMS



5/25/17



PUBLICATIONS





PUBLICATIONS

PARTS MANUALS

- John Deere (MCT 850JR)
 - PC10086 (Parts Catalog)
 - Lists all repair parts and components applicable to the MCT
- JLG (MMV EBFL)
 - TM 10794B-OI/A (repair AND parts manual combined)
 - Lists all repair parts and components applicable to the MMV
- SL-3-11668A (GMTK Stock List)
 - In general, an SL-3 provides a listing of parts and/or components that make an item complete

PUBLICATIONS

MCT PARTS MANUAL

- PC10086 (MCT Parts Catalog)
 - Cover page is read in the same manner as the TM
 - PGs 00I-2 through 00I-29 (general information and contents)
 - Provide information regarding the equipment's serial numbers, remarks and abbreviations, and contains the alphabetical index with page numbers referencing where parts and components are located throughout the manual
 - PGs 0131-2 through 4201-10 (parts/components listing)
 - Provides a listing of parts, components, and requisition data
 - PGs 00II-1 through 00II-21 (Numerical Index)
 - Used to look up part numbers in an alpha-numeric format



PUBLICATIONS

MCT PARTS MANUAL

Alphabetical Index

AIR CLEANER FILTER (ELEMENT PRIMARY AND SECONDARY, SENSOR AND HOSE) 0521-8

PART NAME

PAGE NUMBER

0001-8

ALPHABETICAL INDEX

| PAGE | ITEM | PAGE |
|------|--|-----------|
| A | | |
| | A/C COMPRESSOR CLUTCH DIODE | 1674-54 |
| | A/C COMPRESSOR ELEMENT (CONNECTOR) | 1674-14 |
| | A/C COMPRESSOR HARNESS | 1832-10 |
| | A/C COMPRESSOR SHAFT SEAL KIT | 1832-12 |
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| | A/C CONNECTOR (ARMORED CAB) | 1674-14 |
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| | A/C FAN RELAY (SPLIT CAB) | 1810-8 |
| | A/C FAN RELAY CONNECTOR (ARMORED CAB) | 1674-14 |
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| | A/C RELAY CONNECTOR (ARMORED CAB) | 1674-4 |
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| | A/C RELAYS CONNECTOR | 1674-16 |
| | ACCESS COVER (REAR AND OIL) | 1741-2 |
| | ACCESS COVER, ENGINE (ARMORED CAB) | 1811-18 |
| | ACCESS DOOR, REAR (ARMORED CAB) | 1811-20 |
| | ACCESSORY PLUG ARMORED | 2006-4 |
| | ACCELERATOR PEDAL POWER AND JUNCTION BLOCK | 2412 VOLT |
| | ACCUMULATOR (ARMORED CAB) | 1322-3 |
| | ACCELERATOR PEDAL CONTROL | 5001-10 |
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| | ADAPTERS, HYDRAULIC FILTER | 2164-4 |
| | ADJUSTER, TRACK (ARMORED CAB) | 0133-10 |
| | ADJUSTER, TRACK (CHAIN) AND COMPONENT PARTS | 0133-10 |
| | ADJUSTERS, TRACK (CHAIN) | 0133-10 |
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| | AIR CLEANER DUST (LOAD) VALVE | 0521-8 |
| | AIR CLEANER ELEMENT (PRIMARY AND SECONDARY, SENSOR AND HOSE) | 0521-8 |
| | AIR CONDITIONING COMPRESSOR (HT005) | 0400-54 |
| | AIR CONDITIONING COMPRESSOR (SPLIT CAB) | 1810-6 |
| | AIR CONDITIONING (PLUMBING AND REFRIGERANT LINES) | 1832-16 |
| | AIR CONDITIONING AND COMPONENTS (LINES AND CONDENSER) (SPLIT CAB) | 1832-4 |
| | AIR CONDITIONING AND COMPONENTS (LINES AND CONDENSER) (SPLIT CAB) | 1832-2 |
| | AIR CONDITIONING COMPRESSOR AND ACCESSORIES | 1832-10 |
| | AIR CONDITIONING COMPRESSOR COMPONENTS | 1832-14 |
| | AIR CONDITIONING CONDENSER | 1832-8 |
| | AIR FILTER RESTRICTION CONNECTOR | 1674-52 |
| | AIR FILTER, HVAC (ARMORED CAB) | 1832-4 |
| | AIR FILTER, HVAC (SPLIT CAB) | 1832-4 |
| | AIR INTAKE (HT005) | 0400-12 |
| | AIR PRE-CLEANER | 0522-2 |
| | AIR PRE-CLEANER CONVERSION KIT PARTS ALSO ON AIR PRE-CLEANER PAGE | 1911-4 |
| | AIR RECIRCULATION COVER (ARMORED CAB) | 1810-10 |
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| | AIR TEMPERATURE KNOB (ARMORED CAB) | 1832-4 |
| | BACK PAD CLIPS, SEAT, XMAS TREE | 1821-18 |
| | BACK UP WIRING HARNESS AND CONNECTORS | 1674-36 |
| | BACKUP ALARM CONNECTOR | 1674-36 |
| | BAFFLES, ENGINE SIDE SHIELD (BS01R) | 1912-4 |
| | BALL JOINT, RIGHT ACCESS DOOR HOLD OPEN | 1811-18 |
| | BALL JOINT, RIGHT ACCESS DOOR HOLD OPEN (ARMORED CAB) | 1811-20 |
| | BARREL CAB TILT CYLINDER (ARMORED CAB) | 1810-22 |

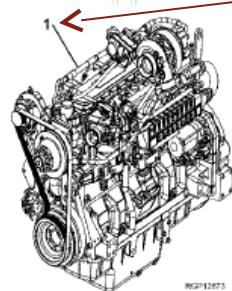
0001-8

BSUR CRAWLER DOZER PC 10006 (20-NOV-04)
REV B

Parts Listing

MCT PARTS MANUAL

REPLACEMENT ENGINE
RGPI2673 - UN-15MAY08



| KEY | PART NO. | PART NAME | QTY. | ENGINE SERIAL NO. | REMARKS |
|-----|----------|---------------|------|----------------------|---------|
| 1 | RE537203 | DIESEL ENGINE | 1 | (CA) | |

| KEY | PART NO. | PART NAME | QTY. | ENGINE SERIAL NO. | REMARKS |
|-----|----------|---------------|------|----------------------|---------|
| 1 | RE537203 | DIESEL ENGINE | 1 | (CA) | |

This line provides part information and is referenced to the illustration using a key number.



PUBLICATIONS

MCT PARTS MANUAL

Numerical Index

PART NO.

KEY

PAGE

RE537203

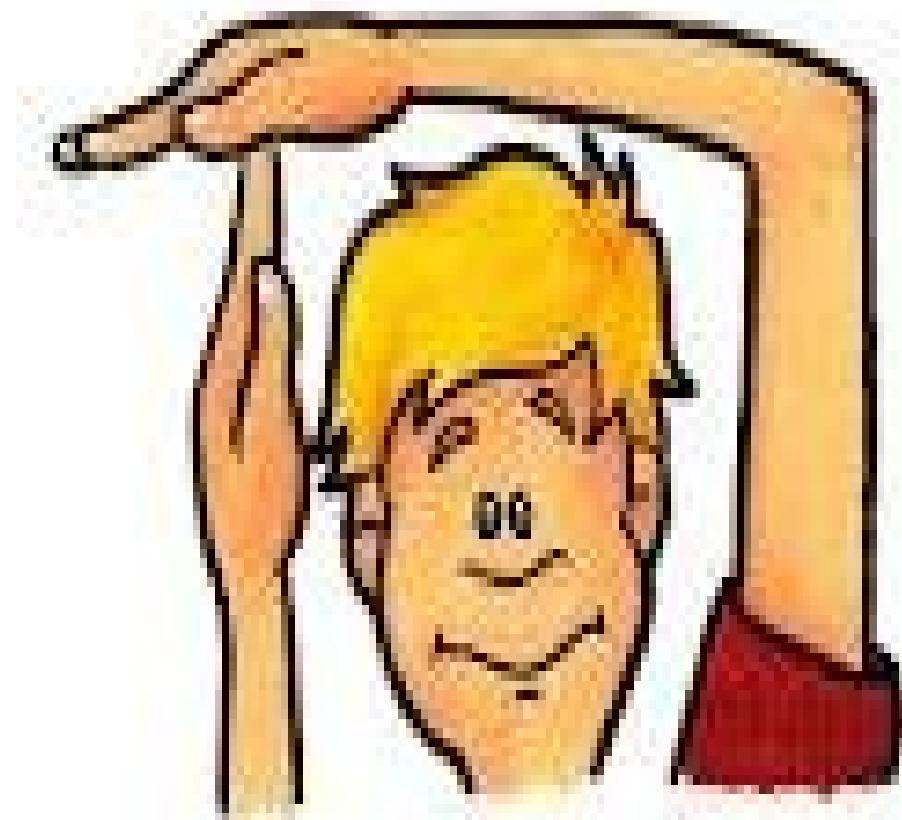
1

0400-61

| 0011-7 | | | |
|-----------------------------|-----|---------|----------|
| NUMERICAL INDEX - CONTINUED | | | |
| PART NO. | KEY | PAGE | PART NO. |
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| RE528400 | 1 | 0400-77 | RE538115 |
| RE528401 | 29 | 0400-77 | RE539019 |
| RE528401 | 48 | 0400-81 | RE539019 |
| RE528402 | 1 | 0400-75 | RE539716 |
| RE528410 | 1 | 0400-73 | RE5423 |
| RE528410 | 20 | 0400-79 | RE5423 |
| RE528410 | 21 | 0400-79 | RE5423 |
| RE528422 | 1 | 0400-18 | RE5423 |
| RE528864 | 13 | 0400-27 | RE57836 |
| RE528864 | 16 | 0400-27 | RE57836 |
| RE528865 | 28 | 0400-27 | RE57836 |
| RE528865 | 29 | 0400-27 | RE60271 |
| RE529167 | 5 | 0400-45 | RE60271 |
| RE529167 | 9 | 0400-67 | RE63751 |
| RE529167 | 7 | 0400-75 | RE71255 |
| RE529167 | 6 | 0400-77 | RE71255 |
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| RE529168 | 32 | 0400-81 | RE10569 |
| RE529168 | 7 | 0400-36 | RE10569 |
| RE529169 | 95 | 0400-36 | RE10569 |
| RE529220 | 28 | 0400-36 | RE10569 |
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| RE530171 | 2 | 0400-32 | RE104845 |
| RE530171 | 4 | 0400-46 | RE104845 |
| RE530121 | 40 | 0400-81 | RE104846 |
| RE530164 | 1 | 0400-16 | RE104846 |
| RE530164 | 1 | 0400-84 | RE104919 |
| RE530170 | 2 | 0400-45 | RE104919 |
| RE530370 | 9 | 0400-36 | RE104919 |
| RE530370 | 1 | 0400-67 | RE104919 |
| RE530459 | 8 | 0400-39 | RE105812 |
| RE530459 | 1 | 0400-97 | RE110581 |
| RE530584 | 1 | 0400-65 | RE111632 |
| RE530668 | 1 | 0400-36 | RE111632 |
| RE531072 | 2 | 0400-35 | RE112056 |
| RE531072 | .. | 0400-35 | RE112209 |
| RE531072 | 24 | 0400-81 | RE112209 |
| RE531077 | 1 | 0400-39 | RE112699 |
| RE531077 | 1 | 0400-68 | RE112857 |
| RE531077 | 25 | 0400-81 | RE113056 |
| RE531077 | 8 | 0400-97 | RE113056 |
| RE531100 | 1 | 0400-79 | RE11542 |
| RE531100 | 1 | 0400-81 | RE115743 |
| RE531195 | 40 | 0400-11 | RE115974 |
| RE531343 | .. | 0400-97 | RE115974 |
| RE531908 | 6 | 0400-27 | RE117721 |
| RE531908 | 2 | 0575-3 | RE117721 |
| RE532429 | 9 | 0400-27 | RE117721 |
| RE532615 | 1 | 0400-36 | RE117721 |
| RE532615 | 1 | 0400-36 | RE117721 |
| RE534261 | 10 | 0400-52 | RE119283 |
| RE534261 | 1 | 0400-36 | RE119383 |
| RE534315 | 1 | 0400-51 | RE119383 |
| RE534552 | 1 | 0400-51 | RE119383 |
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| RE535070 | 46 | 0400-11 | RE119383 |
| RE535264 | 1 | 0400-59 | RE119384 |
| RE535576 | 7 | 0400-35 | RE119384 |
| RE535704 | 1 | 0400-51 | RE119384 |
| RE535991 | 5 | 0400-51 | RE119385 |
| RE536388 | 1 | 0400-45 | RE119385 |
| RE536291 | 5 | 0400-9 | RE120752 |
| RE536705 | 5 | 0400-3 | RE120953 |
| RE536705 | 6 | 0400-3 | RE120954 |
| RE537203 | 1 | 0400-61 | RE121326 |
| RE537363 | 11 | 0400-11 | RE121326 |

SHOP
OPERATIO
NS

PUBLICATIONS



PUBLICATIONS

MMV PARTS MANUAL

TM 10794B-OI/A (MMV repair manual and parts list)

- This TM is a repair manual but it also incorporates a full repair parts list for the MMV
- The first section was covered during a previous instruction.
- Repair parts are located within Chapter 6. This chapter provides you with references, diagrams and schematics, torque limits, tool ID lists, expendable and durable items list, load rating chart, and a repair parts list (on page 0107 00-1).

PUBLICATIONS

MMV PARTS MANUAL

TM 10794B-OI/A (cont.)

- The first section of the Repair parts list provides you with general information (Scope) on how to decipher the information within.
- It authorizes the requisitioning, issue, and disposition of spares and repair parts as indicated by the Source, Maintenance and Recoverability (SMR) codes
 - These are five digit codes that provide you with the source of the particular part, levels of maintenance authorized to remove, use, and replace the part, repair of the part or component, and who is authorized to dispose of the item.



PUBLICATIONS

MMV PARTS MANUAL

SMR Codes

Pg 0107 00-2

0107 00-3

0107 00-4

| SOURCE CODE | MAINTENANCE CODE | | RECOVERABILITY CODE |
|--|--|--|--|
| XXXXX 1st two positions How you get an item. | xxXXx 3rd position Who can install, replace or use the item. | 4th position Who can do complete repair* on the item. | xxxxX 5th position Who determines disposition action on an unserviceable item. |



PUBLICATIONS

MMV PARTS MANUAL

SMR Codes

Pg 0107 00-2

=SOURCE CODE=
METHOD OF OBTAINING
THE ITEM

OBTAINT
PA

1 2
POSITIONS

0107 00-3

=MAINTENANCE CODES=
USE, REMOVE
REPLACE

USE
0
3
POSITION

0107 00-4

RECOVERABILITY
CODE

REPAIR
Z
4
POSITION

DISPOSE
Z
5
POSITION

PUBLICATIONS

MMV PARTS MANUAL

SMR Codes

KFOZZ

XBHZZ

PAHZZ

PAFHD

PUBLICATIONS

MMV PARTS MANUAL

TM 10794B-OI/A (cont.)

- Just like the SL-3 and the MCT parts manual, this TM provides illustrations of the parts listed
- Lists are composed of functional groups in installation sequence
- Each group lists parts in ascending figure and item number sequence.
- Bulk items and repair parts kits are listed separately in their own functional group.
- Items listed are shown on the associated illustrations

PUBLICATIONS

MMV PARTS MANUAL

| WP 0108 00 | | | (1) ITEM NO | (2) SMR CODE | (3) NSN | (4) CAGEC | (5) PART NUMBER | (6) DESCRIPTION AND USEABLE ON CODES (UOC) | (7) QTY |
|---|--------------|---------------|-------------|--------------|---------|-----------|-----------------|---|---------|
| (1) ITEM NO | (2) ENR CODE | (3) NSN | (4) CAGEC | | | | | | |
| 1 | PCOFF | 2530015039963 | 1YHH8 | 6623598 | | | | TIRE AND WHEEL ASSY | 4 |
| 2 | PAOZZ | 3930015037543 | 1YHH8 | 8780052 | | | | NON-DIRECTIONAL | |
| 3 | PAOZZ | 2530015039967 | 1YHH8 | 6623376 | | | | .TIRE, 15.5R-25, L-2, 2 STAR | 1 |
| 4 | PAOZZ | 2530015037544 | 1YHH8 | 7386514 | | | | .RIM 1325 LR | 1 |
| 5 | PAOZZ | 5310015037567 | 1YHH8 | 738651 | | | | .STEM. VALVE | 1 |
| 6 | PAOZZ | 5310015037570 | 1YHH8 | 738651 | | | | NUT, SPH, COLLAR LUG NUT | 40 |
| 7 | PAFHH | 3040015115609 | 1YHH8 | 6624053 | | | | WASHER, LOCK | 40 |
| 8 | PAFHH | 2520015115608 | 1YHH8 | 662405 | | | | AXLE FRONT SEE FIG 3-10 FOR BREAKDOWN | 1 |
| 9 | PAFZZ | 5310015037929 | 1YHH8 | 7310401 | | | | | |
| 10 | PAFZZ | 5310015038984 | 1YHH8 | 731001 | | | | | |
| 11 | PAFZZ | 5306015037927 | 1YHH8 | 731041 | | | | | |
| 12 | PAFZZ | 5306015037926 | 1YHH8 | 731041 | | | | | |
| 13 | PAFHH | 2520015037573 | 1YHH8 | 731040 | | | | | |
| 14 | PAOZZ | 5306012545393 | 1YHH8 | 730371 | | | | | |
| 15 | PAOZZ | 5306015041519 | 1YHH8 | 730371 | | | | | |
| 16 | PAOZZ | 5310014405978 | 1YHH8 | 730705 | | | | | |
| 17 | PAOZZ | 3040015037572 | 1YHH8 | 731410 | | | | | |
| 18 | PAFZZ | 5310015038756 | 1YHH8 | 730705 | | | | | |
| 19 | PAFZZ | 5306015037930 | 1YHH8 | 731041 | | | | | |
| 20 | PAOZZ | 3040015042909 | 1YHH8 | 7138760 | | | | | |
| 21 | PAOZZ | 5306015038991 | 1YHH8 | 8310464 | | | | | |
| 22 | PAOZZ | 5310014410028 | 1YHH8 | 8307007 | | | | | |
| 23 | PAOZZ | 5310015037924 | 1YHH8 | 8310464 | | | | | |
| 24 | PAOZZ | 3040015042872 | 1YHH8 | 7135912 | | | | | |
| 25 | PAOZZ | 3040015042873 | 1YHH8 | 7135922 | | | | | |
| 26 | PAOZZ | 5340015037591 | 1YHH8 | 8800218 | | | | | |
| 27 | PAOZZ | 5340014514178 | 1YHH8 | 6603712 | | | | | |
| 28 | PAOZZ | 5310014410055 | 1YHH8 | 8305012 | | | | | |
| 29 | PAOZZ | 5310015038047 | 1YHH8 | 8310578 | | | | | |
| 30 | PAOZZ | 5310014387019 | 1YHH8 | 8305644 | | | | | |
| DRIVESHAFT TRANSMISSION TO TRANSFER BOX SEE FIG 34 FOR BREAKDOWN | | | | | | | | | |
| BOLT, 1-2-20 NF X2.0 | | | | | | | | | |
| WASHER, LOCK 1/2" | | | | | | | | | |
| NUT, HEX, 1/2-20 NF | | | | | | | | | |
| SHAFT, SHOULDERED TRANSFER BOX TO FRONT AXLE SEE FIG 35 FOR BREAKDOWN | | | | | | | | | |
| SHAFT, SHOULDERED TRANSFER BOX TO FRONT AXLE SEE FIG 37 FOR BREAKDOWN | | | | | | | | | |
| STRAP KIT | | | | | | | | | |
| HOOK, SCREW | | | | | | | | | |
| NUT, PLAIN, HEXAGON 1/2-13 | | | | | | | | | |
| WASHER, BEVEL, 1-2 1/2 | | | | | | | | | |
| NUT, SELF-LOCKING, HEXAGON | | | | | | | | | |
| ELASTIC 1/2-13 | | | | | | | | | |
| END OF FIGURE | | | | | | | | | |

Repair parts list provide
requisition data
The parts are listed within their
groups or major assemblies

PUBLICATIONS

MMV PARTS MANUAL

TM 10794B-OI/A (cont.)

- The next section of the parts list is an NSN cross reference
 - When a National Stock Number is given, use the NIIN (remove the first four numbers of the NSN) to identify where the part is located in the parts listing by figure and item number
 - Used to visually identify parts with a known NSN and to gather requisitioning data and identify components of the SMR code
- Following the NSN cross reference is the Parts number cross reference
 - It is read and used for the same reasons as the NSN cross reference

PUBLICATIONS

COMPONENTS LIST

SL-3-11668A (General Mechanics Tool Kit)

- Used to list and identify tools within the kit
 - Provides requisitioning data, nomenclature, and an inventory checklist
 - Illustrations are included to further identify tools within the kit



PUBLICATIONS

COMPONENTS LIST

SL-3-11668A (cont.)

- The first portion of this SL-3 provides you instruction on the following:
 - How to use the manual and what each column indicates
 - Components and publications requisitioning information
 - Special notes on the material contained

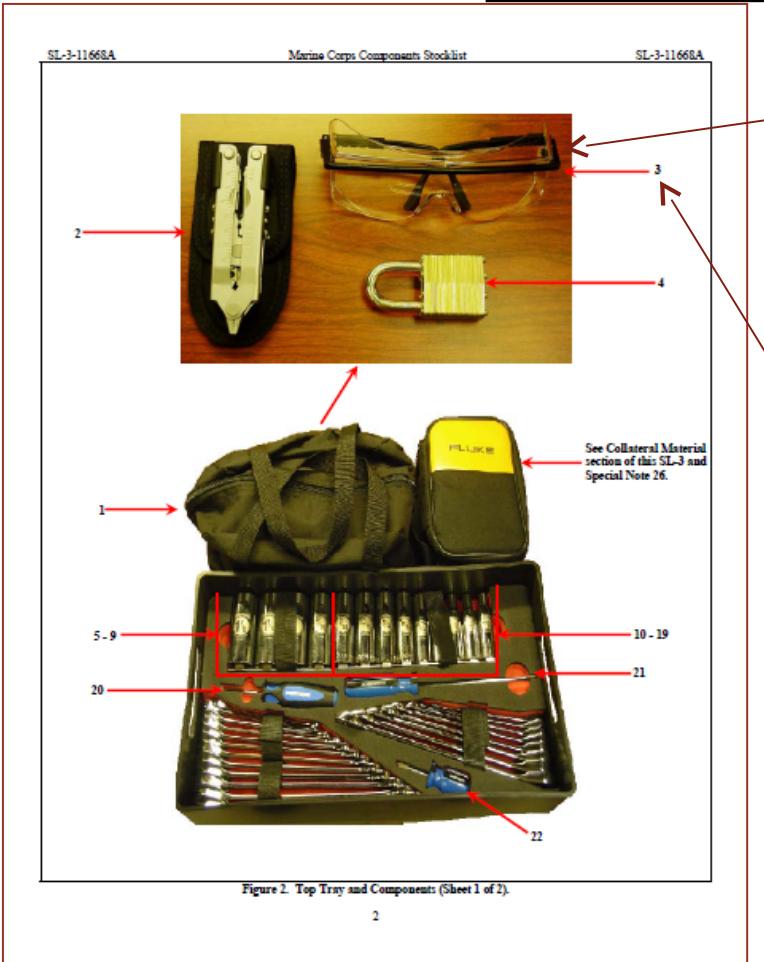
PUBLICATIONS

COMPONENTS LIST

SL-3-11668A (cont.)

- The next section makes up the majority of the manual
 - First provides you with technical data applicable to that particular components list
 - Then goes right into the listing...

COMPONENTS LIST



Illustrations are given to visually identify each component

Each component is assigned an item number and is cross referenced to its NSN, identification, and unit of measure within the parts listing

PUBLICATIONS

COMPONENTS LIST

3

SAFETY GLASSES: designed for use over prescription eyewear; (See Special Note 25) (One Year Warranty);
PN S2500 OTG CAGE 08292

Remember the illustration from the previous slide? What was the number given for the safety glasses? Notice the correlation...

There is no NSN given due to the fact that this kit is new and under warranty. The components will be requisitioned through normal supply channels and the manufacturer of the set.

| SL-3-11668A | | MARINE CORPS COMPONENTS STOCKLIST | | | SL-3-11668A | |
|--|----------|--|----------|--|------------------|-----------------|
| DATE ISSUED: | | SERIAL NO. OF END ITEM: _____ | | | TOOL BOX # _____ | |
| ITEM IDENTIFICATION | | QUANTITY | | PERIODIC INVENTORY (to be conducted with MCO P 4400.15B, or as directed by the Unit Commander) | | INVENTORY SHEET |
| ITEM IDENTIFICATION | QUANTITY | ITEM IDENTIFICATION | QUANTITY | ITEM IDENTIFICATION | QUANTITY | REMARKS |
| SUPPLY ITEM RESPONSIBILITY NOTE: The item number given in column 1 for each component shall correspond to the call-out number given on the drawing figure page. | | | | | | |
| 1 | EA | Top Tray and Components | EA | | | |
| 2 | EA | TOTE BAG: Zipper open and close, two handles. (See Special Note 25) (One Year Warranty); PN 033071G CAGE 08292 | EA | | | |
| 3 | EA | MULTI-TOOL: Gorilla Multi-Tool 600 (DP5000), w/ belt-hang holder. (See Special Note 25) (1/TW), PN 041930G CAGE 08292 | EA | | | |
| 4 | EA | SAFETY GLASSES: designed for use over prescription eyewear; (See Special Note 25) (One Year Warranty); PN 041930G CAGE 08292 | EA | | | |
| 5 | EA | PATCHLOCK: #5, 1-1/8 in. x 1/8 in. (See Special Note 25) (1/TW), PN 514000151845 CAGE 08292 | EA | | | |
| 6 | EA | SOCKET: 1-1/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 7 | EA | SOCKET: 1-1/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 8 | EA | SOCKET: 1-1/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 9 | EA | SOCKET: 1-1/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN B11-6-12-12 CAGE 08292 | EA | | | |
| 10 | EA | SOCKET: 3/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 11 | EA | SOCKET: 3/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 12 | EA | SOCKET: 3/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 13 | EA | SOCKET: 1-1/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 14 | EA | SOCKET: 5/16 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 15 | EA | SOCKET: 9/16 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 16 | EA | SOCKET: 11/16 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 17 | EA | SOCKET: 3/8 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 18 | EA | SOCKET: 11/16 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 19 | EA | SOCKET: RATCH: 8-1/2 in. x 1/2 in. dr. 12 pt; deep length. (See Special Note 25) (1/TW), PN 12-310-12-12-12-12 CAGE 08292 | EA | | | |
| 20 | EA | SCREW WRENCHES: Flat tips 1/4 in. x 6 in. blade. (See Special Note 25) (1/TW), PN 041930-440 CAGE 08292 | EA | | | |
| 21 | EA | SCREW WRENCHES: Flat tips 1/4 in. x 6 in. blade. (See Special Note 25) (1/TW), PN 041930-440 CAGE 08292 | EA | | | |
| 22 | EA | SCREW WRENCHES: Box tips 3/8 in. x 7-1/2 in. blade. (See Special Note 25) (1/TW), PN 041930-440 CAGE 08292 | EA | | | |

Inventory Legend: C - Complete I - Incomplete M - Missing U - Unrecoverable

PUBLICATIONS

COMPONENTS LIST

This page provides lines for signatures when inventories of the tool box assigned are conducted. There will be one SL-3 assigned to each tool box and it is the mechanics responsibility to ensure all tools are properly accounted for on a regular basis. This is a supervised event and therefore a line is provided for their signature as well.

PUBLICATIONS

PARTS MANUAL REVIEW

- Different manuals and how they are used.
- How to read parts manuals and SL-3's

PUBLICATIONS

QUESTIONS

- **Q:** What manual is utilized for inventory purposes of the GMTK?
- **A:** SL-3.
- **Q:** What is the NIIN?
- **A:** The NIIN is the NSN without the first four characters.



PUBLICATIONS





PUBLICATIONS

GCSS-MC



PUBLICATIONS

GCSS-MC

- Global
- Combat
- Service
- Support

- Marine Corps

PUBLICATIONS

GCSS-MC

- GCSS-MC provides the capability to see what equipment needs to be repaired, order parts, identify where the parts are located and who is available to perform the work.
- The Maintainer will be able to plan for, and schedule, maintenance resources and will also have the ability to review item configuration, readiness information, and past historical and ownership in a data repository environment.

PUBLICATIONS

GCSS-MC SERVICE REQUEST

PURPOSE

- Used to request equipment services, maintenance, record maintenance performed and report maintenance performed.
- Includes but not limited to:
 - Preventive maintenance
 - Corrective maintenance
 - Limited Technical Inspections
 - Modifications
 - Calibration

PUBLICATIONS

GCSS-MC SERVICE REQUEST

RESPONSIBILITIES

- The equipment owner, user and or custodian is responsible for initial preparation to include the heading and description of work.

PUBLICATIONS

GCSS-MC

- Advice codes
- Locators
- Groups and Sub-groups

PUBLICATIONS

GCSS-MC

Parts Request Function

- Used in conjunction with the Service Request Tasks to requisition, receipt for, cancel and record partial issues and credits of repair parts.

PUBLICATIONS

GCSS-MC

Creating a Service Request



PUBLICATIONS

GCSS-MC

Creating a Parts Request



PUBLICATIONS

GCSS-MC

Accounting for materials and time

PUBLICATIONS

GCSS-MC REVIEW

- The definition of GCSS-MC.
- The purpose and uses of GCSS-MC.
- Advise codes.
- Groups.
- Locators and subinventory.

PUBLICATIONS

QUESTIONS

- **Q:** What does the acronym GCSS-MC mean?
- **A:** Global Combat Service Support- Marine Corps.
- **Q:** What does the advise code 2P mean?
- **A:** Item required in one continuous length.

SHOP
OPERATIO
NS

PUBLICATIONS



5/25/17



TOOLS



SHOP EQUIPMENT, GENERAL PURPOSE

Common #10



Common #12



**Provides storage for general purpose
shop tools and transportable
Enhances general maintenance
support**

TOOLS

SHOP EQUIPMENT CONTACT MAINTENANCE COMMON NO. 20

Self-contained tool & equipment shelter mounted on a HMMWV A2. Hand tools, power tools, oxy/acetylene (gas) cutting & welding capability, with compressor and pneumatic tools utilized on contact teams.



TOOLS

SHOP EQUIPMENT, GENERAL PURPOSE COMMON NO. 22



TOOLS

SHOP EQUIPMENT, GENERAL PURPOSE COMMON NO. 24



TOOLS

SHOP EQUIPMENT, GENERAL PURPOSE COMMON NO. 30





TOOLS

SHOP EQUIPMENT, GENERAL PURPOSE COMMON NO. 32



5/25/17

VEHICLE AUTOMATED DIAGNOSTIC SYSTEM (VADS)

- Lightweight, portable diagnostic system
- performs diagnostics on diesel engines, transmissions, central tire inflation systems, and other mechanical, electrical and hydraulic systems
 - Utilizes an Interactive Electronic Technical Manual (IETM)
- The major component is a Test Adapter Vehicle (TAV)
 - Interfaced with a PC or laptop controller

TOOLS

VEHICLE AUTOMATED DIAGNOSTIC SYSTEM (VADS)



Laptop
Test Adapter Vehicle
(TAV)

Cables
Adapter Set

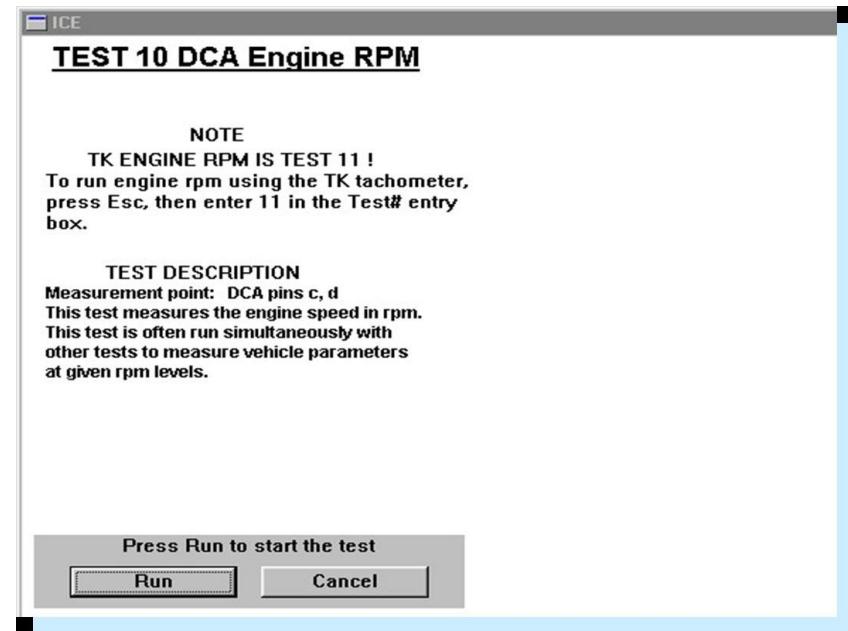
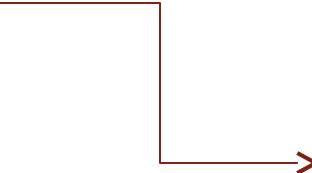


TOOLS

VEHICLE AUTOMATED DIAGNOSTIC SYSTEM (VADS)

- It can measure voltage, resistance, and frequency on 90 different test points.

With the use of a computer, various types of tests can be run.



TOOLS

REQUIRED ITEMS

- Mechanics must ensure that they have the following:
 - General Mechanics Tool Kit
 - Proper Technical Manual
 - Personal Protective Equipment may vary on task to be completed

TOOLS

KEEP IN MIND

- As a mechanic, it is your responsibility to maintain the tools you are assigned and any tools that you use. (**Keep your tool set complete**)
- Keep your tools within easy reach and where they cannot fall on the deck or into equipment.
- If working outside with the elements, ensure that your tool box remains closed. This will prevent rust from forming.
- Use the right tool for the job. (**Don't use a $\frac{1}{4}$ inch ratchet to bust rusted bolts.**)

TOOLS

TOOLS REVIEW

- Common tool kits.
- VADS system.
- Required items when working on gear.

TOOLS

QUESTIONS

Q: What level of maintenance utilizes the common 24?

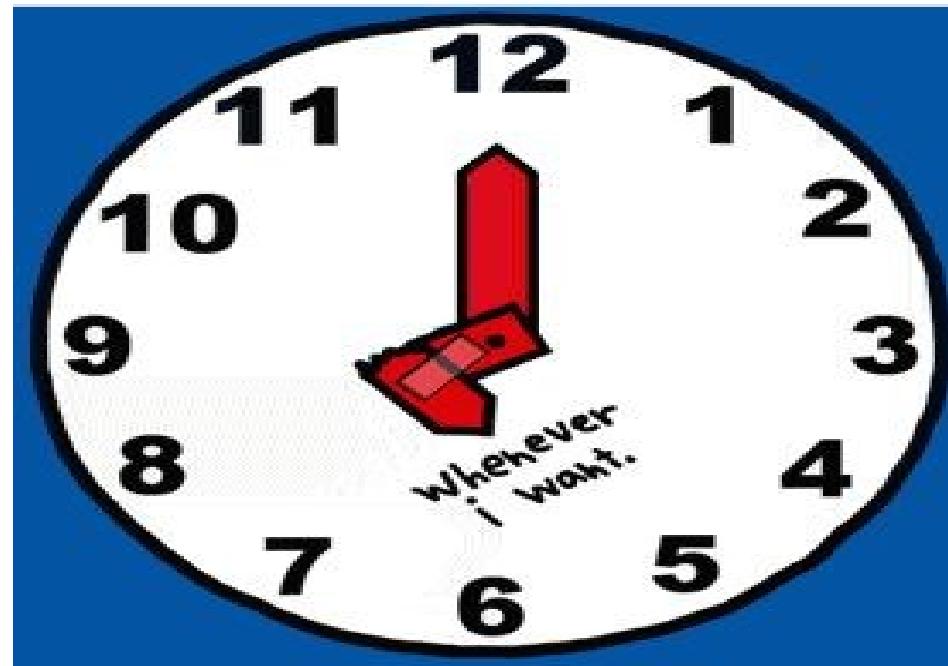
A: Direct support field level.

Q: What are the three things needed when working on a piece of equipment?

A: General mechanic tool box, proper technical manual, and PPE.

TOOLS

**BREAK
WILL RETURN**



SHOP OPERATIONS

SUMMARY

- Review Shop Operations main ideas
- Questions?
- 10 Minute break
- In-depth review of Shop Operations